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**INSOMNIA IN THE ELDERLY: A DIAGNOSTIC OPPORTUNITY
(USUALLY MISSED)**

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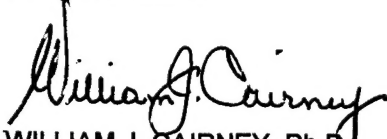
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A handwritten signature in black ink, reading "William J. Cairney". The signature is fluid and cursive, with the first name "William" and last name "Cairney" clearly legible.

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INSOMNIA IN THE ELDERLY: A DIAGNOSIS OPPORTUNITY (usually missed)

ABSTRACT:

Insomnia is a complaint seen so commonly with elderly patients, yet it is so seldomly addressed by more than a prescription on the part of the primary health care provider. There are many causes of insomnia in this population that if not discovered and remedied may lead to unnecessary morbidity and mortality. Insomnia presents a diagnostic opportunity for health care providers to find secondary causes in order to prevent adverse outcomes and increase quality of life for the patient. This study presents a no nonsense and logical approach to common problems and diagnoses that should not be missed.

BACKGROUND:

Insomnia is a common complaint of elderly patients, but it is rarely addressed by physicians with the same diagnostic rigor given to other complaints. Ideally, physicians should approach this as a diagnostic opportunity to find secondary causes, prevent adverse outcomes, and significantly increase the quality of patients' lives. Yet as physicians, many dread hearing it, and rarely address it with more than just a prescription. Generally, few questions are asked prior to prescribing a hypnotic. Unfortunately, prescribing hypnotics in our growing elderly population can have tragic consequences, especially if done carelessly. Insomnia (like nausea) is only a symptom. It is *always due to some secondary cause*. It is the secondary cause that physicians should be looking for. Physicians need to be aware of the secondary causes of insomnia in the elderly and that they are often life threatening. Secondary causes may lead to unnecessary morbidity and mortality if not recognized and treated. The absolute first priority should be to rule out any life threatening causes. Secondly, physicians need to determine if other diseases or health related issues may be disturbing sleep.

- Many elderly patients are very *stoic*. The complaint of insomnia may be the only clue to an undiagnosed cardiopulmonary, GI or urologic disease. Many elderly patients have lived through the Great Depression and other hardships. They may be reluctant to say that chest pain, breathing difficulty, abdominal pain, nocturia, or leg pain is disturbing their sleep. They don't like to complain, tend to keep health problems to themselves, and have an inherent fear of doctors. They are the "silent sufferers" of their generation, and from personal experience, mostly men. Others think that these problems are just associated with "growing old".
- Most physicians feel uncomfortable with insomnia due to its complexity. The number of possible secondary causes (both physical and psychological) is overwhelming, even if we could remember them all ("Where do I even start?"). Consider the time it would take to explore all of these with many the prying questions about the small details of a patient's life. Exploring the emotional issues of a patient is also unsettling for many physicians. These issues make the use of hypnotics for a "quick fix" very attractive and the drug manufacturers know it.
- *Insomnia is rarely a primary reason for an office visit* and is often an afterthought by the patient. Many times the request for "something to help me sleep" comes at the end of a visit. It may be tempting to just pull out the Rx pad and be done with it. Instead, the patient needs to be rescheduled for an extended appointment (preferably with spouse or sleeping partner). This would be an opportune time to hand them a sleep disturbance questionnaire to be completed prior to their insomnia office visit.

A focused Sleep Disturbance Survey (Figure 1) is a diagnostic screening tool which can help overcome these problems. This problem-focused questionnaire can help highlight the areas of the most likely secondary causes even before asking direct questions. This greatly increases the likelihood of making the correct diagnosis of a secondary cause. It could also save hours of time and office visits.

NORMAL CHANGES IN SLEEP:

Complaints about sleep habits increase with age, but not all are abnormal. With age, circadian rhythms are affected, leading to a decreased regulation of sleep. Few people are aware of normal changes in sleep that occur with aging.^{1,2,3,4}

Older people:

- take longer to fall asleep and stay asleep for fewer hours;
- have an increased number of awakenings during the night usually in response to discomfort from a chronic ailment;
- are less adaptive to environmental changes like noise, light and temperature changes (which increase awakenings);
- are more likely to take naps; and/or
- have an increase in periodic limb movements (nocturnal myoclonus).

"Sleep efficiency" decreases with age (time in bed compared to time asleep). The distribution of sleep stages changes. The result is a decrease in total rapid eye movement (REM) sleep and in REM sleep latency.

There also is an increase in "advanced sleep phase syndrome"² where patients fall asleep early and arise early (like 8 p.m./3 a.m.) but still get 7 to 8 hours of sleep. They complain of waking up at 3 a.m. and not being able to fall back to sleep. This can easily be mistaken for depression symptoms. A good opening question to a patient is "do you awaken refreshed?" If the answer is yes, the patient probably doesn't have insomnia.

Recent research suggests that melatonin, produced by the pineal gland, is linked with the circadian sleep-awake cycle and may be responsible for age-related sleep changes. Melatonin levels are known to decrease with old age. A recent study also suggests a relation between melatonin deficiency and an increased prevalence of sleep disorders with advancing age. The same study also suggests that lack of bright light exposure may also cause decreased production of melatonin.⁵ This may provide some insight into the higher prevalence of sleep disturbances that occur with nursing home residents.

CAUSES OF INSOMNIA:

A wide range of conditions, primarily those that cause pain and discomfort, may contribute to elderly sleep disruption. Cardiopulmonary problems, gastrointestinal distress, extremity pain, and urological dysfunction are the most common problems that disrupt or interfere with normal sleep in elderly patients.¹

There is a large overlap between medical and psychiatric components of insomnia in the geriatric population. Depression should always be considered as having a possible role in any insomnia complaint. Insomnia is a very prominent symptom of depression, and may be the only complaint from an undiagnosed and untreated depressed patient. It is estimated that 15 - 20%

of the elderly have symptoms of depression severe enough to require psychiatric intervention.⁶ Depression also should be considered a potentially life-threatening cause of insomnia because of its well known association with suicide. The geriatric population of the United States is roughly 12%; but 25% of the country's suicide victims are age 65 or over. The elderly have the highest suicide rate of any age group.⁶

Obstructive Sleep Apnea is an important consideration in a differential that shouldn't be missed. This is a primary sleep disorder. It is defined as more than 5 episodes of apnea/hr of > 10 seconds duration. The primary complaint of patients with sleep apnea is excessive daytime sleepiness that impairs daytime functioning. It is associated primarily with heavy older men. The patient's spouse may be the best historian for this. Sleep apnea should be suspected if the spouse complains about very loud snoring. The patient should be asked if he has excessive daytime sleepiness. This is the hallmark complaint of sleep apnea. It is life-threatening and warrants a sleep study if suspected. Use of benzodiazepines on a patient with sleep apnea can result in sudden death. They can also kill hypoxic Chronic Obstructive Pulmonary Disease (COPD) patients. We cannot assume that hypnotics are harmless.

Medications - Take an inventory:

Many elderly patients are on multiple medications, both prescribed and OTC. Therefore, it is important to inquire about what medications they are taking and at what time of the day. Stimulants (decongestants, caffeine, nicotine, thyroid & asthma medications), Selective Serotonin Reuptake Inhibitor (SSRI) antidepressants, beta-blockers, steroids, and diuretics can all induce insomnia or interfere with normal sleep if taken too close to bedtime. Alcohol is the most commonly used drug for insomnia by adults of all ages. Alcohol may help decrease the time to fall asleep, but REM time is decreased and may cause sleep interruption (rebound).

Psychiatric:

35% of patients seen in sleep labs for insomnia have psychiatric disorders.⁷ Depression can significantly disrupt sleep. Depression should be suspected if the patient complains of early final awakening.

Anxiety is usually characterized by difficulty falling asleep. Retirement, financial problems, loss or illness of a spouse and fear of death are common causes of anxiety that can evolve into chronic insomnia.

Worried or fearful patients may suffer from obsessive-compulsive personality traits. During the day, they obsess and worry about their sleep problem. At night they worry so much about not sleeping that their obsession with these thoughts prohibits them from sleeping.¹

If a psychiatric component to a patient's insomnia is suspected, a Prime-MD⁸ test may be a helpful screening tool to consider.

EVALUATION OF INSOMNIA:

History:

This is the most important and time consuming part of the evaluation. A good sleep questionnaire will initially address the most pertinent differentials allowing the provider to weed out improbable causes and better focus the history. Streamlining history taking will prevent going down blind alleys and will make the evaluation more efficient.

A good history will usually require a spouse or bed partner to be present. When taking a history, remember that chronic illness is present in more than half of those over age 65 and may cause

symptoms which interfere with sleep.² Some of these include asthma, angina, congestive heart failure, (CHF), arthritis pain, urinary tract infection, (UTI), nocturia and Gastro-Esophageal Reflux Disease, (GERD).²

Ask the patient if the problem is with initiating sleep, staying asleep or early final awakening. Trouble falling asleep may be from anxiety or fear. Trouble staying asleep may be from disturbance, pain, discomfort, nocturia or environmental cause. Early final awakening may be from depression.¹

The duration of insomnia can help classify the type of insomnia that a patient is experiencing.³ *Transient Insomnia* usually occurs secondary to psychosocial stressors that are recognized and apparent to the patient.

Short-Term Insomnia (over weeks) may be caused by situational anxiety or be due to an acute medical illness.

Long-Term Insomnia (months) may be a primary sleep disorder or related to a chronic condition which has not been addressed or has not responded to therapy.³

If a good history and physical are inconclusive, a sleep diary of 2 weeks may be very helpful.^{2,4} Daily entries should include:

- bedtime;
- time taken to fall asleep;
- time of awakening;
- total sleep time estimate;
- number of awakenings or unusual activities;
- naps-time/number/length;
- how they felt during the day.

A sleep diary will contain accurate information if properly performed, and may contrast remarkably with the original history given by the patient.

Examination:

Look at the general body habitus of the patient. Short-necked patients with truncal obesity ("Tasmanian Devil" appearance) are more prone to obstructive sleep apnea.

A thorough upper respiratory exam is in order to check for any obstruction or potential obstruction of the upper airway. Look for large tonsils, large uvula, long soft palate, poorly fitting dentures or plates. Look nasally for large turbinates and septal deviations. Check the neck for deviated trachea or abnormal thyroid. A good chest exam may reveal gallops, arrhythmias, significant murmurs or abnormal lung sounds. The abdominal exam may show epigastric or lower abdominal tenderness, an enlarged liver, aortic aneurysm or a tender pancreas from alcohol abuse. A rectal exam is important to check for an enlarged or tender prostate or perirectal abscess. A urine dipstick will quickly and cheaply reveal a UTI. Look for anything on the patient's body that looks uncomfortable and may interfere with sleep such

as an irritating rash, joint deformity or red gouty joint, marked kyphosis or a protuberant abdomen. In essence, don't just go through the motions of an exam, look for something!

TREATMENT:

A good history and physical will usually identify the cause(s) and help direct toward appropriate treatment.

Before using any treatment, have a grasp of the cause of the insomnia, and have any life threatening causes ruled out (cardiopulmonary, sleep apnea, depression, etc.). Multiple approaches to treatment are likely. Approaches may be used in combination because multiple causes for insomnia are common. If a medical problem or discomfort is causing sleep disruption, this should, of course, be addressed first.⁶ After initiating a treatment plan, follow-up and reevaluations are in order.

Nonpharmacologic:

Generally, a nonpharmacologic approach to insomnia is preferable to medication. Changes in poor sleep habits, lifestyle and sleep environment are good first line approaches. Many refer to this as "sleep hygiene". Good sleep hygiene recommendations are logical, common sense and easily understood by most patients. (See table 1.)² Another simple approach to maladaptive sleep behavior is stimulus control. (See table 2.)² Environmental changes (comfort measures) may also help. These may include avoiding large meals just prior to retiring, a very comfortable room temperature, and restriction of evening fluids.³ Nasal splints (used by football players) may help mild obstructive sleep apnea from septal deviations or large nasal turbinates. Discontinue or change any medication that may be a culprit. Weight loss may be appropriate, as well as abstinence from alcohol. Psychotherapy, relaxation training, increased sunlight exposure, decreased napping and early evening exercise also may be of help.

Psychiatric:

If depression or anxiety are suspected, these should be pursued. Some will require referral to a psychiatrist but most will respond to behavioral modification and medication. Consider ordering a TSH on all depressed patients. Hypothyroidism is common in this population and the symptoms of hypothyroid patients can mimic those of depression.

Refer the patient to a sleep lab if sleep apnea or other primary sleep disorders such as narcolepsy are suspected or if symptoms persist and are resistant to treatment.

Drug Therapy:

Low dose melatonin (2-3 mg) taken 2 hours prior to bedtime may be helpful in patients that primarily complain of the quality of their sleep or with the time it takes to fall asleep. This is not yet FDA approved. In a small study that has been done, however, no adverse reactions were reported. The time to fall asleep was decreased without suppressing REM sleep or causing daytime drowsiness.⁹

The use of hypnotics on a short term basis may still be appropriate. Situational stress is an appropriate reason for temporary use of hypnotics. They also can be helpful in the initiation of a behavioral program to increase a patient's compliance.² A patient may have significant decrease in anxiety just knowing that medication is on hand if needed. Just the presence of the medication may help facilitate sleep.

Antihistamines are poor choices and should rarely be considered. Their anticholinergic side effects make them contraindicated for patients with glaucoma, urinary retention, constipation, GERD and dementia. Their use can also induce delirium.¹ Anticholinergic side-effects also should be kept in mind when prescribing sedating antidepressants.

Benzodiazepines are the most commonly used drugs for insomnia for all age groups. They are classified by their half-life duration.

Considerations for Benzodiazepine use³

Some physicians have favored a very short-acting benzodiazepine (Halcion) to avoid daytime drowsiness and gait instability. However, the CNS side effects of this drug are high, including agitation, confusion, impaired psychomotor skills and both retrograde and anterograde amnesia.³ Therefore, they are not used or recommended by many physicians on geriatric patients.

Others prefer an intermediately acting benzodiazepine such as Serax, Restoril or Ativan. The half-life of these is from 8-15 hours. They are metabolized by pathways which are generally unchanged in the elderly. Also, they have few or no active metabolites.³ Therefore, daytime sedation is much less likely to occur. Unfortunately, after 1-2 weeks of regular use, early morning insomnia may be a problem in some patients.³ These drugs are the most preferred benzodiazepines for these patients, but should still only be used sparingly.

Long acting benzodiazepines like Dalmane, Valium, Librium and Tranxene are effective in initiating and maintaining sleep without tolerance for weeks but are associated with adverse CNS side-effects in the elderly such as daytime sedation, confusion and ataxia. The half-life of Dalmane is >100 hours. Hypnotics with a half-life of > 24 hours can put patients at higher risk for hip fractures. Those with half-lives of <24 hours do not.¹⁰ Long acting benzodiazepines should generally be avoided with the elderly.

Klonopin and Valium in low doses are very effective for nocturnal myoclonus and restless leg syndrome.¹

Other Drugs

Ambien is a relatively new hypnotic with a short half-life, no rebound withdrawal effect and a very low side effect incidence. Unlike most hypnotics, REM sleep is preserved. This is gaining popularity among physicians but has only been seen on the market a short time.

Sedative antidepressants are commonly used in the elderly because of the prevalence of depression. They are most useful when insomnia is due to depression or panic attacks.² Most commonly used are nortriptyline, desipramine, doxepin and trazadone. Amitriptyline is not recommended because of its anticholinergic effects.

Chloral hydrate may be useful in some cases. It has a rapid onset of action, but can cause gastritis and produce drug interactions in patients on Coumadin or Dilantin.³ Some patients also complain of morning hangover.

Geriatric patients in nursing homes may get disoriented and agitated at night ("sundowning"). They commonly will roam the halls, wake up others and disturb the staff (who will surely call the physician and interrupt his or her sleep). Low doses of Haldol or Navane are the most effective treatment for sundowning syndrome.¹ These medications reduce agitation and anxiety which allows them to sleep. Hypnotics should be avoided because they tend to increase confusion and disorientation in these patients.¹

Summary:

When an elderly patient complains of insomnia, it is important that it be pursued with a genuine effort at diagnosis and not the "knee-jerk" response of writing a prescription. The latter will cause the physician to miss a significant physical or emotional disorder or life threatening condition. Finding and treating underlying causes of insomnia should be the focus. After ruling out life threatening causes, secondary causes such as medical problems causing discomfort, medications or psychiatric problems should be investigated. A detailed sleep disturbance questionnaire completed by the patient and sleep partner can be a significant screening tool which may quickly help identify secondary causes. This questionnaire also has the advantage of lowering the anxiety level of the physician dealing with this complaint. Physical examination is also a valuable part of the evaluation. It should not be overlooked. Non-pharmacological approaches should be used along with appropriate pharmacological treatment (the lowest dose of medication for the shortest time).

If unable to solve the problem, order a sleep study or consider a referral. Follow-up and reevaluations are a must. Few patients are as grateful as those who can finally (and regularly) have a good night's sleep, largely due to a thorough diagnostic effort.

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Figure 1

Sleep Disturbance Survey

Please fill this out with your spouse or sleeping partner (if at all possible) and answer all questions. With your help, we may be able to figure this out and solve your sleep problem.

A) yes no Do you awake refreshed and rested?

How long have you had problems sleeping? ____ weeks ____ months ____ years

B) yes no Do you have excessive daytime sleepiness?

yes no Have you often been told that you SNORE EXCESSIVELY?

yes no Have you been told that sometimes you stop breathing for a few seconds while sleeping?

C) yes no Does any pain, discomfort, breathing problems, indigestion or leg pain disturb your sleep? If so, please describe your symptoms. Please mention any medical or physical problem that causes you discomfort.

yes no Do you need to get up at night to urinate more than twice?

If so, how many times? _____

D) Circle the sleeping problem(s) that you may experience.

- falling asleep
- staying asleep
- early final awakening
- none of these

yes no Have you ever been treated for depression or felt that you have had a problem with significant depression or anxiety?

yes no Do you feel that you worry a lot?

yes no Do you have any big fears (do you think you are fearful?)?

Of what?

E) Please list all medications you are taking and circle those taken close to bedtime:

Please list all over-the counter medications, vitamins or herbal remedies you occasionally or frequently take (if not listed before).

F) yes no Do lights, noise, room temperature or an old mattress disturb your sleep?

G) yes no Do you commonly consume any type of beer or alcohol in the evening?
If so, *what* and how much?

yes no Do you usually have caffeine after noon?
If so, *what*, when and how much?

Please estimate your total daily caffeine intake (sodas, coffee, tea, etc.).

yes no Do you usually have daily exercise? If so, please describe.

yes no Do you smoke? If so, how much?

yes no Do you usually take a nap during the day? If so; when and how long?

H) WHAT DO YOU THINK is causing you to sleep poorly?

What do you usually do when you can't sleep? Please check.

- read?
- watch TV?
- take something or drink something? What?
- other, please describe:

KEY

- A) Indicates if there is a sleep problem, and whether it is short or long term.
- B) Screens for Sleep Apnea.
- C) Screens for medical problems.
- D) Screens for psychiatric problems.
- E) Possible medication causes.
- F) Environmental causes.
- G) Habits.
- H) May indicate insight and problem solving ability.

Table 1

GOOD SLEEP HABITS FOR A RESTFUL NIGHT

Go to bed and wake up at the same time every day.

Exercise every day, but not too close to bedtime.

Try to foresee and prevent sleep interruptions. Window darkening shades or ear plugs may be helpful. Urinate shortly before going to bed.

Be sure that the room temperature is just right.

Avoid being hungry or eating a large meal just before bedtime. A light snack may be helpful if you are hungry.

Avoid caffeine intake after noon. Don't drink much of anything before retiring.

Stop smoking. Nicotine can interfere with sleep. Insomnia is a significant side effect of nicotine patches when worn at night.

Avoid excess alcohol or any alcohol near bedtime.

Ask your physician if any of your medications could be interfering with your sleep or if the time of day you are taking them could cause sleep disruption.

Avoid late afternoon naps, especially long ones.

Reserve your bed and bedroom for sleeping and sexual activity only. Don't eat or read in bed.

Don't take naps during the day.

Maintain a healthy weight. Obesity makes breathing more difficult, may disrupt sleep and worsen mild sleep apnea.

Table 2

STIMULUS CONTROL THERAPY

Go to bed only when you are sleepy.

If you have difficulty falling asleep, get up and go to another room. Engage in a quiet, non-stimulating activity (like reading) until sleepy again. Then return to bed. Repeat as necessary.

Keep the same bedtime and wake up time everyday.